



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,193	04/23/2001	Tsutomu Kawano	01246/LH	3939
1933	7590	05/20/2005	EXAMINER	
FRISHAUF, HOLTZ, GOODMAN & CHICK, PC 767 THIRD AVENUE 25TH FLOOR NEW YORK, NY 10017-2023			EDWARDS, PATRICK L	
			ART UNIT	PAPER NUMBER
			2621	

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/840,193

Applicant(s)

KAWANO, TSUTOMU

Examiner

Patrick L. Edwards

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2621

### **DETAILED ACTION**

1. The response received on 12-29-2004 has been placed in the file and was considered by the examiner. An action on the merits follows.

#### ***Response to Arguments***

2. The applicant's arguments, filed on 12-29-2004, have been fully considered. A response to these arguments is provided below.

### **Claim Objections**

#### **Summary of Argument:**

Claims 1 and 30 were objected to because of an informality. Applicant has amended these claims to correct the minor informality and overcome the objection.

#### **Examiner's Response:**

The previous claim objections are hereby withdrawn.

### **35 USC 112, Second Paragraph Rejections**

#### **Procedural Posture:**

Claims 1 and 30 were rejected because the metes and bounds of the term "feature amount" were unclear. Claims 1 and 30 were further rejected because of confusion with regards to the object extraction and contour recognition steps. Claims 2-5 were rejected because of confusion with respect to the connection between the contour recognition means and a position change of a boundary of the object region. Claims 3 and 7 were rejected because the phrase "prepared in advance" was not clear in context with the rest of the claim. Claims 6-7 were rejected because of confusion regarding the connection between the contour recognizing means and the width of the object region.

#### **Summary of Argument:**

Applicant has amended all of the above claims to correct the indefinite claims and overcome the rejections. Applicant submits that the rejections should therefore be withdrawn.

#### **Examiner's Response:**

The examiner agrees. The rejections are hereby withdrawn.

### **Prior Art Rejections**

#### **Summary of Argument:**

Claim 1 was rejected in the previous office action under 35 USC 102b as being anticipated by Kido et al. (USPN 5,732,149). Applicant argues that Kido fails to disclose a contour recognizing means which extracts a

Art Unit: 2621

contour based on the extracted object region. Applicant alleges that the characteristic value of Kido is not the same as the claimed 'feature amount.'

Further, applicant argues that Kido fails to disclose classifying judgment criteria for different kinds of predetermined contours and that Kido fails to disclose judging the kind of recognized contour on the basis of the classifying judgment criteria.

Examiner's Response:

Applicant's arguments have been fully considered but are not persuasive. Applicant has not offered any evidence to support the conclusion that the 'characteristic value' is patentably distinct from the claimed 'feature amount.' The below rejection, on the other hand, provides express support for the examiner's conclusion that the characteristic value qualifies as the claimed 'feature amount.'

Applicant's further arguments are with respect to limitations added to the claim in the most recent amendment. These limitations have not been discussed before, and will therefore be discussed in the below rejection.

*Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kido et al (USPN 5,732,149).

Regarding claim 1: Kido discloses a radiation image processing apparatus, comprising: an object region extracting section which detects an amount of radiation energy transmitted through an object representing a body part, forms radiation image data of the object, and extracts an object region based on the radiation image data (col. 6 line 65 – col. 7 line 4: The Kido reference teaches extracting an irradiated field region (i.e. an object region) in a radiation image. Since this extraction is performed on a radiation image, we know that it is based on the radiation image data (see figure 4)).

Kido further discloses a contour recognizing section that recognizes a contour of the object (i.e. the body part) based on the extracted object region (col. 16 lines 48-53).

Kido further discloses that this contour recognizing section has data of classifying judgment criteria for each of plural different kinds of predetermined contours, judges the kind of recognized contour to which one of the plural different kinds of contours belongs on the basis of the classifying judgment criteria (col. 16 lines 44-59: The reference describes a threshold value for judging the boundary line candidate. This threshold value is analogous to the claimed classifying judgment data because it is used to judge the kind of recognized contour (i.e. an adult boundary line versus a child boundary line qualifies as a 'kind' of recognized contour)); and provides a feature

Art Unit: 2621

amount regarding the kind of recognized contour in accordance with the judgment result (col. 16 lines 44-59: The reference describes characteristic values that define all types of different characteristics of an imaged object (including the and its accompanying boundary lines (i.e. the contour of the object). Thus, this characteristic value qualifies as the claimed 'feature amount' because it is regarding the 'kind' of recognized contour (i.e. the type of object being photographed, positional characteristics, configurational characteristics, patient information, etc.)).

Regarding claim 2: Kido discloses that the contour recognizing section judges the kind of recognized contour based on a position change of a boundary of the objection region (Kido col. 13 lines 35-59: The Kido reference discloses using positional information of a detected boundary point as a starting point in searching for an adjacent boundary point. We can conclude, therefore, that the contour recognizing means is using this position change information. Furthermore, any image processing apparatus that detects the contours of an object (i.e. the line that forms the border of an object in an image) inherently uses position changes of the boundary in the detection process.))

Regarding claim 8: Kido discloses that a body part in a radiation image is recognized by using a feature amount obtained in the contour recognizing means (Kido col. 14 lines 32-43, 61-64: The Kido reference discloses recognizing a body part (i.e. chest, abdomen, etc. as is stated on lines 61-64) using characteristic values (which are analogous to the claimed "feature amount"))).

#### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kido et al. as applied to claim 1 above, and further in view of Yasui et al. (USPN 6,493,458 B2). The arguments as to the relevance of Kido as applied in claim 1 above are incorporated herein.

With regard to claims 6 and 7, Kido discloses a radiation image processing apparatus with a contour recognizing means.

Kido also discloses a region boundary point detecting means that detects a boundary of the object region (Kido col. 14 lines 38-43).

Kido fails to expressly disclose that the contour recognizing means uses local region widths of the object region. Yasui, however, discloses a contour recognizing means (Yasui col. 8 line 4) which uses local region widths of the object region (Yasui col. 22 lines 26-33 with Figure 29).

Art Unit: 2621

Yasui further discloses a contour specifying means that specifies the kind of recognized contour from the region widths calculated by the region width calculating means (Yasui col. 22 lines 26-33 with Figure 29).

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Kido's contour recognizing means by determining the borders of the object region (and hence the contour) by calculating the width of each region on every scanning line as taught by Yasui. Such a modification would have allowed for an accurate, reliable method of determining the boundary (i.e. contour) of a localized object region (Yasui col. 2 line 61 – col. 3 line 10).

7. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kido et al. as applied to claims 1 and 2 above, and further in view of Armato, III et al. (USPN 6,335,980) (herein 'Armato'). The arguments as to the relevance of Kido as applied above are incorporated herein.

With regard to claim 3, Kido discloses a region boundary point detecting means that detects a boundary of the object region (Kido col. 14 lines 38-43).

Kido discloses determining adjacent region boundary points with respect to already found region boundary points and connecting these adjacent boundary points to create the image boundary. These region boundary points are inherently associated with a spatial position, and therefore each of them are separated by a certain spatial distance amount. Kido, though, fails to expressly disclose the calculation of this distance. The Kido reference, therefore, is insufficient to meet the claimed limitations regarding a "position change amount calculating means".

Armato, however, discloses a position change amount calculating means that calculates a position change amount of a boundary of the object region from plural region boundary points detected by the region boundary point detecting means (Armato col. 5 lines 56-64 and Figure 7: The Armato reference discloses comparing the x and y coordinates of the detected boundary points with the neighboring boundary points along the boundary to determine displacement values. This is analogous to the calculation of a position change amount as recited in the claim.

Armato further discloses a contour specifying means that specifies a contour from the position change amount calculated by the position change amount calculating means (Armato col. 5 lines 56-64 with Figure 7: Figure 7 of the Armato reference shows how the calculated displacement values specify the contour (i.e. border)).

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Kido's image contour recognizing means by using the spatial difference values between adjoining boundary points in order to specify a contour as taught by Armato. Such a modification would have allowed for a computationally efficient determination of a contour of a body part in a radiographic image (Armato col. 8 lines 1-25).

With regard to claims 4 and 5, Armato further discloses that the position change amount is a distance between neighboring region boundary points (Armato col. 7 lines 47-53: The Armato reference discloses comparing the x and y coordinates of each boundary point with the x and y coordinates of neighboring boundary points. Since we are comparing these boundary points in the x – y coordinate system, we are inherently using a distance between the two points in order to specify our contour). This also meets the limitations of claim 5 in that we are comparing an amount of change in both the horizontal and the vertical directions.

Art Unit: 2621

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kido as applied to claim 1 above, and further in view of Shinbata (USPN 6,594,380 B2). The arguments as to the relevance of Kido as applied to claim 1 above are incorporated herein.

With regard to claim 9, The Kido reference is insufficient to meet the limitations, because it fails to disclose a radiographing orientation judging means. Shinbata, however, discloses a radiographing orientation judging means for judging a radiographic orientation for an object from the contour based on the feature amount (Shinbata col. 5 lines 31-59: The Shinbata reference discloses determining the radiographic posture (which is analogous to the radiographic orientation recited in the claim) of an object based on the profile (i.e. contour) of a portion of the image. The radiographic posture is determined based on a feature amount.

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Kido's radiation image processing apparatus by determining the radiographic orientation of extracted objects as taught by Shinbata. Such a modification would have allowed for a system that could automatically detect the posture (orientation) of the subject, and would no longer require this information to be input manually (Shinbata col. 1 lines 39-41). This would have made for a faster system that also avoided unnecessary input errors.

### *Conclusion*

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (703) 305-6301. The examiner can normally be reached on 8:30am - 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

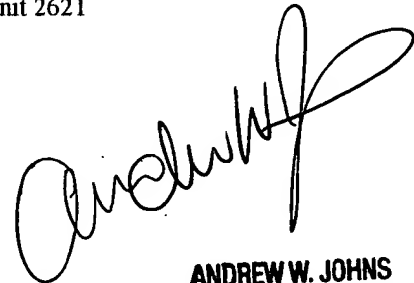
Art Unit: 2621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick L Edwards

Art Unit 2621

ple

A handwritten signature in black ink, appearing to read 'Patrick L Edwards', with a long horizontal flourish extending to the right.A handwritten signature in black ink, appearing to read 'Andrew W. Johns', with a large, stylized loop at the end.

**ANDREW W. JOHNS  
PRIMARY EXAMINER**